

AMENDMENTS TO THE CLAIMS

1. (Currently Amended) A method for transmitting a signal from a sensor put in the human body to the outside of the human body, the method comprising:
 - generating electric potential difference between transmitting electrodes installed on the surface of the sensor, the sensor capable of being ingested and capable of traveling autonomously within the human body;
 - switching the transmitting electrodes according to information to be transmitted, such that to create:
 - a positive is represented as first state, wherein the first transmitting electrode has a higher electric potential and the second transmitting electrode has a lower electric potential; and
 - a negative is represented as a second state, wherein the first transmitting electrode has a lower electric potential and the second transmitting electrode has a higher electric potential;
 - supplying a conduction current from a first transmitting electrode having the higher electric potential to the inside of the human body to flow the current through the surface of the human body back into the inside of the human body, and sinking the current to the second transmitting electrode having lower electric potential; and
 - inducing a voltage between receiving electrodes installed on the surface of the human body by the current flowing through the surface of the human body.

2. (Canceled)

3. (Currently Amended) A system for data communication in the human body, the system comprising:

a sensor, which is put in the human body, and having transmitting electrodes installed on the surface of the sensor configured to be electrically isolated and configured to generate electric potential difference, the sensor capable of being ingested and capable of traveling autonomously within the human body,

a coding circuit located in the sensor;

a switching circuit that switches, based on an output from the coding circuit, the transmitting electrodes configured to be switched, such to create that:

a positive is represented as first state, wherein when at the first transmitting electrode has a higher electric potential and the a second transmitting electrode has a lower electric potential; and

a negative is represented as a second state, wherein when the first transmitting electrode has a lower electric potential and the second transmitting electrode has a higher electric potential; and

a receiver installed on the a surface of the human body configured to receive a conduction current generated by the electric potential difference through the human body.

4. (Currently Amended) The system of claim 3, wherein the transmitting electrodes are installed on the surface of the sensor and are configured to be electrically isolated.

5. (Previously Presented) The system of claim 3, wherein the transmitting electrodes are electrically connected with an internal circuit of the sensor to receive an electric signal generated from the internal circuit.

6. (Currently Amended) The system of claim 4, wherein the transmitting sensor electrodes isare three-dimensionally formed.

7. (Previously Presented) The system of claim 6, wherein the sensor includes a first electrode and a second electrode which surround both ends of the sensor.

8. (Currently Amended) The system of claim 6, wherein the sensor includes a first electrode surrounding an end of the sensor and a second electrode covering anthe other end of the sensor as a band shape.

9. (Previously Presented) The system of claim 6, wherein the sensor includes a first electrode and a second electrode respectively covering both ends of the sensor as a band shape.

10. (Previously Presented) The system of claim 6, wherein the sensor includes a first electrode and a second electrode symmetrically formed along a longer axis of the sensor.

11. (Previously Presented) The system of claim 3, wherein the surface of the sensor for isolating of the transmitting electrodes is made of one of peek, polyethylene and polypropylene.

12. (Previously Presented) The system of claim 11, wherein the surface of the sensor for isolating of the transmitting electrodes is coated with Parylene.

13. (Previously Presented) The system of claim 3, wherein the surface of the sensor is made of a conductive material harmless to the human body.

14. (Currently Amended) The system of claim 13, wherein the conductive material is comprises SUS316L or gold.

15-38. (Canceled)

39. (Currently Amended) A method for transmitting a signal from a capsule type endoscope put in the human body to ~~the~~an outside of the human body, the method comprising:
generating electric potential difference between a first transmitting electrode and a second transmitting electrodes installed on ~~the~~a surface of a capsule type endoscope, the capsule type endoscope capable of being ingested and capable of traveling autonomously within the human body;

switching the transmitting electrodes according to information to be transmitted, such that to create:

a positive is represented as first state, when wherein the first transmitting electrode has a higher electric potential and the second transmitting electrode has a lower electric potential; and

a negative is represented as a second state, when wherein the first transmitting electrode has a lower electric potential and the second transmitting electrode has a higher electric potential;

supplying a conduction current from the first transmitting electrode having a higher electric potential to ~~the an~~ inside of the human body to flow ~~the a~~ current through ~~the a~~ surface of the human body back into the inside of the human body and sinking the current to the second transmitting electrode having ~~a the~~ lower electric potential; and inducing a voltage between receiving electrodes installed on the surface of the human body by the current flowing through the surface of the human body.

40. (Original) The method of claim 39, wherein the capsule type endoscope makes a current flow from one transmitting electrode to the other transmitting electrode when a signal to be transmitted is a digital signal “1” and makes a current flow from the other transmitting electrode to one transmitting electrode when a signal to be transmitted is a digital signal “0.”

41. (Original) The method of claim 39, wherein a size of the current is limited by connecting resistance serially to the transmitting electrode respectively.

42. (Original) The method of claim 41, wherein a capacitor is connected to each resistance in parallel.

43. (Currently Amended) The method of claim 1, wherein the generating the electric potential difference comprises controlling ~~the an~~ output of the transmitting electrodes to be transmitted to ~~the an~~ outside of the human body by a switching circuit.

44. (Currently Amended) The method of claim 43, wherein the controlling the output of the transmitting electrodes comprises switching an input signal to the transmitting electrodes by the switching circuit, ~~such so that~~:

~~a positive is represented as a the first state is represented~~ when the first transmitting electrode having a higher electric potential and the second transmitting electrode has a lower electric potential; and

~~a negative is represented as athe second state is represented~~ when first transmitting electrode having a lower electric potential and second transmitting electrode has a higher electric potential.

45. (Previously Presented) The method of claim 44, further comprising supplying the conduction current in a digital form.

46. (Previously Presented) The method of claim 45, further comprising inducing a digital voltage between receiving electrodes installed on the surface of the human body by the conduction current flowing through the surface of the human body.

47. (New) The system of claim 3,
wherein during the first state, the switching circuit applies a positive voltage to the first transmitting electrode and grounds the second transmitting electrode, and
wherein during the second state, the switching circuit grounds the first transmitting electrode and applies the positive voltage to the second transmitting electrode.

48. (New) The system of claim 3, wherein the sensor further comprises a current limiting circuit that is located between the switching circuit and the transmitting electrodes.